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# An Inquiry Into the Relationship of an Adaptation of Kephart's Perceptual Survey Rating Scale to Reading Performance in the Ninth Grade

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# AN INQUIRY INTO THE RELATIONSHIP OF AN ADAPTATION OF KEPHART'S PERCEPTUAL SURVEY RATING SCALE TO READING PERFORMANCE IN THE NINTH GRADE

by

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# CHAPTER I

## INTRODUCTION

Some of the most violent polemics in psychology and in all behavioral sciences have centered around man's intellectual capacities -- how they develop, how mutable or inmutable they are, how they should be measured, and what the implications of the decisions on these issues should be for educating and improving the race. [1]

Historically, "fixed intelligence" and "predetermined development" have encompassed most psychological theorizing in regard to the development of cognitive abilities and how they relate to intellectual capacities on intelligence.

The scope of this thesis does not permit an investigation into the numerous theories of intellectual development. The thesis is concerned, however, with those theories and theorists which impute the physo-physiological and perceptual-motor approaches to learning and cognitive development.

Osgood (1953), a behavior theorist affected rapprochement between S-R theory and cognitive theory by proposing a theory of Mediational Processes. According to Osgood, stimulus objects elicit a complex pattern of reactions

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[1] J. McV. Hunt, Intelligence and Experience (New York: The Ronald Press Company, 1961), p. 3.

from organisms; initially these patterns may arise directly from the presence of the stimulus object or in conjunction with the stimulus object. The conjunctive or "detachable" reactions were considered to be conditioned to the total pattern of reactions exuded by the object.[2]

Perceptual-motor theory, in essence, has extended and refined this proposition of stimulus objects and signs.

Kephart (1960), the leading perceptual-motor theorist, also refutes the concept of single sensory stimulation. He prefers to think of sensory input as a "stimulus situation" composed of information received simultaneously from many sensory sources.

In Kephart's words:

> We live in a world in which various forms of energy are impinging upon the organism at all times. These various forms of energy are setting up simultaneous input patterns in various sensory fields which are originating in various external areas of the body. The perception that results is based upon the net effect of all these simultaneous stimulations, not upon one isolated input.[3]

Past experience is one additional aspect to the concept of stimulus situation. At least part of the memory process or past experience is considered to be, more or less, a permanent alteration of the organism.

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[2]Ibid., p. 69.

[3]Newell C. Kephart, The Slow Learner in the Classroom (Columbus, Ohio: Charles E. Merrill Books, Inc., 1960), p. 58.

The present experience does not have meaning unless it is integrated with pertinent data from past experience.[4]

The inadequacy of a pure stimulus-response theory led to other extentions (Schonfeld, 1950) of the S-R theory. Schonfeld has argued:

> .....that the avoidance response terminates stimulus compounds in which proprioceptive and tactile stimuli are important components. Recent experimental data, cited to support this formulation are interpreted as indicating that proprioceptive stimuli generated by the organism's own movements can act as secondary negative or positive reinforces and thus control the movements producing them.[5]

This is in accord with Kephart's view that perception occurs in a closed system, whereby a portion of the output is fedback into the output creating a servomechanism which controls itself.

Hebb (1949) distinguished between what he called primary learnings and later learnings. This is similar to Osgood's (1953) old and new learnings. Osgood conceived old learnings in terms of stimulus response relationships with a central mediating process consisting of portions of the early responses; Hebb conceived of primary learnings in terms of perceptual experience.[6]

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[4] Ibid., p. 59

[5] O. Hobart Mowrer, Learning Theory and Behavior (New York: John Wiley and Sons, Inc., 1960), p. 291.

[6] McV. Hunt, op. cit., p. 85

It is the premise of perceptual-motor theorists that many of the so-called readiness skills which modern educators and school test for and promote, are the result of a long series of learnings. These skills are built upon a perceptual foundation derived through interaction and manipulation with environment and environmental objects.

The seemingly simple task of drawing a square requires the development of complex physical and psychological skills running the gamut from gross motor control; eye-hand coordination; laterality (distinguishing between left and right side of body), and controlling two sides of the body separately and simultaneously); and directionality (the projection of laterality into space).

Newer developments in the theory of brain function (Granit, 1955) view the roll of external stimulation as modulating ongoing intrinsic activity.[7]

According to Kephart, perceptual input corresponds closely to the energy impinging upon the organism, but the correspondence is never perfect. Through the process of integration (past and present experience) and scanning (thought to be related to the alpha rhythm of the cortex), the neural input activity is translated and transformed to generate an output pattern of neural activity. A portion of the output pattern is re-routed to the input end of the closed system of control. By this means, the perceptual process can be

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[7] Ibid., p. 88.

continued until an adequate matching of output and feedback has been achieved before muscular response occurs.[8]

Hake suggests that a feedback system similar to those postulated by communication engineers appears to exist in the brain. This feedback operates, according to Hake, from the control system or interpreter (Kephart's servomechanism?) to receptors to govern which aspects of stimulation are sensed and transmitted.[9]

The previously existing hiatus between perceptual and motor development has been further strictured by recent theorizing and experimentation with perceptual motor techniques. These theories indicate that the development of many highly developed cognitive skills may depend on previous neurophysiological or perceptual-motor development. Prior to these postulations, sensory or perceptual activities were customarily thought to be independent of motor or muscular activities.

Kephart has stated:

> Periodicals... and textbooks... consistently make a distinction between input (sensory or perceptual activities) and output (motor or muscular activities). If you open a book on child psychology, you will find a chapter devoted to perceptual development and a separate chapter devoted to motor development. The implica-

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[8]Kephart, op. cit., pp. 55-62.

[9]McV. Hunt, op. cit., p. 89.

> tion is that these are two separate activities which can be studied one apart from the other and which are only tenuously connected, if at all.[10]

The thesis of perceptual-motor and psycho (neuro)-physiological proponents is that such a division of thinking is fallacious and can only lead to error.

The psycho-physiological approach requires that the child use all of his body, or a major portion of it. The general theory is that certain physical movements will improve the functioning of the central nervous system. If this functioning is improved, it is presumed that academic performances will then be improved, or remedial instruction will be made easier.[11]

The perceptual-motor approach maintains that input (stimuli) and output (muscular response) are necessarily integrated because they occur in a closed system. Whatever happens in one area, affects the entire system. Kephart prefers to think of input and output as one hyphenated term, input-output, rather than two separate entities.

The emphasis of both perceptual-motor and psycho-physiological theorist is on motoric development. This is not to say that the theorists are con-

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[10]Kephart, op. cit., p. 63.

[11]Patrick Ashlock and Mario Campanaro, "An Inquiry into the Feasibility of a Motor-Academic Improvement Program in the High School" (A progress report, Norridge, Illinois, January, 1967). p. 1.

cerned with physiological maturation or development per se, but rather with motor development as the root and integral part of intellectual functioning.

Cognition is viewed as the culmination of a complex hierarchical process involving the entire organism. It is presumed that adequate early sensory-motor experiences result in an organization of the central nervous system which is necessary for adequate perceptual functioning; which, in turn, is essential for adequate cognitive functioning.

Coghill, Jersild and Piaget have indicated that the earliest learnings are based on motor learnings; that the development of the organism proceeds from centralized mass movements, through integration of these two into motor patterns as the basis for learnings. The child performs a very large number of motor experiments within and in relation to the environment which surrounds him. On the basis of these experiments he develops a reasonably large knowledge of motor activity (or body of motor information) before he begins to respond in terms of perceptual relationships with the environment or before he begins to respond to symbolic or conceptual relationships.[12]

Godfrey has succinctly summarized this: "Movement patterns are the means by which the child gathers the perceptual data about his environment

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[12]Margaret M. Thompson, "Effects of Movement on the Total Development of Children and Youth" (paper read at Madison College "Movement Symposium," Harrisonburg, Virginia, February 29, 1965).

as the basis for learning."[13]

## THE PROBLEM

The Reading Research Foundation in Chicago has conducted a number of studies (elementary school students as subjects) using some of Kephart's training techniques and have found significant correlations between perceptual motor training, reading readiness and reading achievement.

The Achievement Center for Children at Purdue University has conducted numerous studies with elementary age students utilizing Kephart's concepts and training techniques. Dunsing lists in an annotated bibliography research work completed at the Achievement Center for Children which appears to significantly relate perceptual-motor theory and practice to reading achievement.

Although there is considerable body of perceptual-motor research, there is no reported research using perceptual-motor concepts with high school subjects.

This study stems from an adaptation of Kephart's Perceptual Survey Rating Scale(PSRS) by Dr. Patrick Ashlock and Mario Campanaro. Kephart's PSRS was developed for use with young children; the adaptation aspired to

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[13]Barbara B. Godfrey, "Progress in School Achievement Through Motor Therapy" (Abstract of Report Presented at the Research Section, AAHPER, National Convention, Minneapolis, Minnesota, May 6, 1963).

increase the difficulty of the scale making it a discriminating perceptual-motor instrument at the ninth grade level. (Appendixes A & B)

The adapted PSRS was administered to 110 freshmen boys to determine which items did in fact increase the difficulty of the scale. (Appendix C)

It must be emphasized that at the time of the adaptation there was no evidence to indicate whether performances on adapted PSRS items did in fact discriminate between those high school freshmen who had perceptual-motor associated learning problems and those who did not.

In this thesis an initial exploration will be attempted into relationships between adapted PSRS items and patterns with reading one of the most important hierarchical cognitive skill. Although the primary purpose of this thesis is to investigate whether PSRS test score patterns can be used to differentiate between youngsters who have perceptual-motor based learning (reading) problems and those who do not, the following more basic objectives must be considered before the adapted PSRS is acceptable as a suitable instrument for the high school level:

1. To obtain a preliminary standization (reliability and passing criteria) on the already adapted PSRS.

2. To expand the inquiry into the feasibility of an adaptation of the PSRS suitable for ninth grade students by including the use of subjects of both sexes.

3. To test the correlations and intercorrelations of the scores obtained from an administration of the adapted PSRS;

scores from an administration of the Gates-MacGinite Reading Tests Survey E, form 3; scores obtained from an administration of the Cattell Culture Fair Intelligence Test, Scale 3.

## THE SIGNIFICANCE OF THE PROBLEM

The problem is significant in the light of its curricular and instructional implications. If perceptual-motor skills are found to be related to reading success at the high school level, training in the perceptual-motor area would appear to be a profitable addition to the curriculum. Methods for teaching these skills might be more effective if based upon items or constellations of items from the adapted PSRS which relate to cognitive development than if based upon a "logical" sequence developed by a textbook-writer.

Kephart in discussing the needs of the "slow learner" pointed up the problem in the following manner:

> .....many children are coming into our schools lacking in basic-motor skills. As a result of this basic lack, they are less able to participate in the formal educational activities which are arranged for them and they are less able to learn from these activities. They become slow learners in the classroom.
>
> For many of these children, artifical means may have to be devised to provide additional practice in perceptual-motor skills. [14]

As a result of these studies using Kephart's PSRS, Dunsing suggests

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[14] Kephart, op. cit., p. 16.

a strong relationship between intelligence and reading achievement which is so consistently reported in the literature. It is suspected, Dunsing relates, that the similarity of the test instruments (reading and I. Q. tests) themselves may add a dimension which spuriously inflates the relationship reported. Dunsing further states that this effect might be largely offset by the use of the Cattell Culture Fair Test which does not rely on reading skills. [15]

## DEFINITION OF TERMS

The following terms represent concepts of central importance to this study. For the convenience of the reader, these terms are defined as follows:

Perceptual Survey Rating Scale (PSRS)

The Perceptual Survey Rating Scale used in this study is the scale adapted by Ashlock and Campanaro. This scale includes those items which 89 per cent or less of the previous 100 students passed. This instrument may tentatively be defined as a series of perceptual-motor skills.

Reading

Reading is operationally defined as that skill tested through the administration of the Gates-MacGinite Reading Tests. (Appendix D)

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[15] Jack D. Dunsing, "Reading Achievement Its Relationship to Perceptual and Motor Activities" (A Cooperative Study, Allegheny County Schools, Indiana, 1963).

Cattell Culture Fair Intelligence Test

The Cattell Test is a non-verbal intelligence test that appears to be visually perceptually oriented.

# CHAPTER II

## REVIEW OF THE RELATED LITERATURE

### Delacato's Neurological Organization

The central concept of Delacato's theory is neurological organization. This assumes that ontogeny, the process of individual development proceeds in an orderly way, anatomically, in the central nervous system, progressing through the medulla and (spinal) cord, pons, mid-brain, and cortex, and culminating in hemispheric dominance. [1]

> According to Delacato (1959), "neurological organization is that physiologically optimum condition which exists uniquely and most completely in man and is the result of a total and uninterrupted ontogenetic neural development. This development recapitulates the phylogenetic neural development of man and begins during the first trimester of gestation and ends about six and one-half years of age in normal humans. This orderly development in humans progresses vertically through the spinal cord and all other areas of the central nervous system up to the level of the cortex, as it does with all mammals. Man's final and unique developmental progression takes place at the level of the cortex and it is lateral (from left to right or from right to left). [2]

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[1] Melvin Paul Robbins, "The Delacato Interpretation of Neurological Organization, "Reading Research Quarterly, Vol. 1, No. 3., (Spring, 1966), p. 59.

[2] Carl H. Delacato, The Treatment and Prevention of Reading Problems (Springfield: Charles C. Thomas, publisher, 1959), p. 19.

It is theorized by Delacato that this progression can be plotted on an inter-dependent continuum. If, developmentally, a neurological stage or level is unfunctioning or incomplete, all succeeding higher levels are affected because lower levels become operative and dominant. In essence, each neurological level becomes dominant in the development process only if previous levels are complete. Added to this organizational schema, is the unique human vertical progression which occurs laterally at the level of the cortex.

Delacato has further argued that differences in language facility, ranging from the inability to speak (aphasia) to success in reading, are functions of neurological organization. By using the techniques described by Delacato to measure the level of neurological organization, it becomes theoretically possible to prescribe activities aimed at enhancing this neurological organization and, consequently, to prevent or eliminate language disorders.[3]

One of the last steps in complete human function is the development of cortical hemispheric dominance. The two hemispheres begin to develop differentiated functions. One hemisphere controls the skills (sideness, eyeness, fottness) and the other hemisphere of the brain assumes a subdominant role. (Tonality). This final lateral development takes place at

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[3]Robbins, loc. cit.

from three to eight years and results in a totally neurologically organized individual.

Brain injury or inadequate subcortical organization impairs establishment of hemispheric dominance. If, at this stage of development, an individual does not make a complete dominant - subdominant hemispheric adjustment, speech and/or reading difficulties may develop.

To quote Delacato:

> Man has evolved to the point that the two hemispheres of the brain, although they mirror each other physically, they have differentiated functions. Right handed humans are one-sided, i. e., they are right eyed, right footed, and right handed, with the left cortical hemisphere controlling the organism.
>
> Trauma of the controlling cortical hemisphere results in loss of language skills. [4]

Bond and Tinker (1957), cite Dearborn, a leading exponent of laterality and reading disability, and his contentions based on clinical cases that there is a greater incidence of left dominance, crossed dominance, and lack of dominance among poor readers than among good readers. Dearborn notes that reading difficulties are most likely to appear among children who have been changed over in handedness or whose lateral dominance has never been

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[4] Carl H. Delacato, The Diagnosis and Treatment of Speech and Reading Problems (Springfield: Charles C. Thomas, publisher, 1963), p. 6.

well established.[5]

Harris (1961), in discussing various theories of dominance in relation to reading indicates that there are studies which support and refute the dominance and reading hypothesis; he, however, has concluded from his own experience, that there is more than a change relationship between lateral dominance and reading disability.[6]

Robbins (1966), concludes his study using Delacato's techniques with second grade students by admonishing educators to exercise caution in considering the adoption of the neurological organization theory because the theory was not significantly supported by his findings.[7]

Dunsing (1963), reported slight relationship between cortical hemispheric dominance and reading.[8]

Robbins and Dunsing both found slight correlations between cortical hemispheric dominance and reading, but both imply that Delacato's theory

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[5]Guy L. Bond and Miles A. Tinker, Reading Difficulties -- Their Diagnosis and Correction (New York: Appleton - Century - Grofts, Inc., 1957), p. 100.

[6]Albert J. Harris, How to Increase Reading Ability (New York: David McKay Company, Inc., 1961), p. 251.

[7]Robbins, op. cit., p. 77.

[8]Dunsing, loc. cit.

would demand a much stronger relationship.

Bond and Tinker have concluded that the equivocal evidence in this area needs further analysis. Most investigations have compared the incidence of dominance anomalies in reading disability groups with the incidence in groups of normal readers. It seems reasonable to assume that (1) the dominance anomalies of the good readers when not accompanied by other handicaps were overcome, but (2) these anomalies among poor readers constituted only one of several handicapping conditions and that the constellation of factors produced reading disability.[9]

## Kephart's Perceptual Motor Approach

Older theories of perception conceived the perceptual process as a relatively simple one through which "sensory" information was received by the organism, certain "associations" took place, and a response occurred. Newer theories, such as Kephart's on the other hand, consider the perceptual process as much more complex and much more dynamic than was formerly thought.

Another central concept of the Kephart approach is that of child development.

According to Kephart:

> .....the first responses of the newborn infant are motor responses.

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[9]Bond and Tinker, op. cit., p. 101.

> The first learnings in the human organism are motor learnings. The earliest motor responses represent the beginnings of a long process of development and learning. Through his first motor explorations, the child begins to find out about himself and the world around him. These motor experimentations and motor learnings become the foundation upon which subsequent learnings are built.[10]

In perceptual theory, Kephart accepts the hypothesis that the total perceptual process operates in a closed system involving a feedback control. The perceptual process begins with the stimulation of a sense organ. This is caused by some form of energy impinging upon the exterior of the organism. Some alterations occur in the energy patterns; as a result, certain sensitive cells discharge and send to the cortex a pattern of neural impulses. This pattern of neural impulses, arriving at the cortex is referred to as the input.

When an input pattern has been generated in the sensory projection areas of the cortex, there is a branching or radiate effect out through the internuncial neurons into the surrounding association areas. It is in the association areas that the second step in the perceptual process takes place; this is known as the integrative process. Sensory impulses from various sense organs are integrated here, and past experience are coordinated with present information.

The elaborate [illegible]attern is then scanned by a scanning devise

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[10]Newell C. Kephart, The Brain Injured Child in the Classroom (Chicago: National Society for Crippled Children and Adults, Inc., 1963), p. 1.

> and translated into an output pattern. It seems probable that this scanning mechanism is a simple translation from an association pattern to a motor pattern, without alteration and with a minimum of distortion.[11]

A pattern of neural impulses is then generated in the cortex, sent down to muscles, and results in movement. A portion of this output is drained off and is fedback into the system at the input end. The presence of feedback in the perceptual process makes the system a servomechanism, or closed system of control.

To Kephart, then, motor learnings provide a foundation upon which subsequent learnings are based, and motoric responses are an essential and continuous part of the total perceptual process.

As Schnobrich has succinctly summarized:

> Perception is, most simply, a composite of present sensations and memories of past sensations. Our perceptions come from within us, from muscles and joints, internal organs, and from environment around us.[12]

Through experimentation with his body and environment, the young child develops laterality (distinction between right and left within his own organism). The development of laterality is important because it enables one to keep a proper orientation with his environment. The only difference

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[11]Kephart, op. cit., p. 59.

[12]Janice Schnobrich, "Perceptual-Motor Training and Its Practial Application" (Chicago: The Reading Research Foundation, Inc., 1966). (Mimeographed)

between a B and D, according to Kephart, is one of laterality. If there is no left and right inside of the organism, there can be no projection of the concept left and right outside the organism. When the child has developed laterality, he is ready to project these directional concepts into external space. This is of special importance when considering the development of cognitive skills, particularly reading, upon which the development of many other cognitive skills depends.

Kephart has stated that perceptual problems in reading cannot be separated from the total problem of perceptual development. According to Kephart, the perceptual process in reading involves all the complexities of perception in general. Because of orientation and sequence factors, words and letters must be seen not only as variations in shape, but also as systematized variations in a perceptual structure.[13]

There have been several studies conducted by the Reading Research Foundation in Chicago which reported significant improvement in reading ability for first grade students after systematic perceptual-motor training. In the McCormick study it was reported that the experimental group, receiving perceptual-motor training, showed significantly greater reading

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[13]Newell C. Kephart, "Perceptual Motor Aspects of Reading," Reading and Inquiry, Proceedings of the Annual Convention (Newark, Delaware: International Reading Association, 1965), p. 363.

improvement than the control group which did not have perceptual-motor training.[14]

Dunsing found jumping, skipping, and hopping, items on Kephart's PSRS (PMS) were highly related to both reading and I. Q. in fourth, fifth, and sixth grade subjects.[15]

Roach found that twenty-nine out of thirty individual items on Kephart's PSRS differentiated between non-achievers and achievers. The author concluded that the PSRS is a valuable instrument for identifying non-achieving students in the elementary grades.[16]

Sevilla concluded that the PSRS is related to eighth grade achievement but that due to the scale's restricted range of difficulty, it is less efficient than at lower grade levels.[17]

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[14]Clarence C. McCormick, "Improvement in Reading Achievement Through Perceptual-Motor Training" (Paper submitted to Research Quarterly, May, 1966).

[15]Dunsing, op. cit., p. 29.

[16]E. G. Roach, "The Perceptual-Motor Survey; A Normative Study" (unpublished doctoral dissertation, Purdue University, Lafayette, Indiana, 1962).

[17]Sofia A. Sevilla, "Perceptual-Motor Skills and School Achievement in Eight Grade Boys" (unpublished master's thesis, Purdue University, Lafayette, Indiana, 1962).

It appears that the previous findings, and a number of other related studies, indicate significant relationships between perceptual-motor training and reading, as well as school achievement in general.

Alexander Luria, a Russian psychologist, has developed an approach strikingly similar to Delacato's and Kephart's. Luria has, however, added another dimension -- that of speech. The contention is that a motoric foundation can best be established when the child is forced to "think out" or interalize his movements through speech.

There are differences among the program or approaches advocated by these authors, but there seems to be agreement on the basic principle that some form of patterned perceptual-motor activities is essential for the development of the ability to learn more complex cognitive skills.

# CHAPTER III

# PROCEDURES EMPLOYED IN COLLECTING DATA

## INTRODUCTION

In this chapter the tests and procedures used in the study will be listed, and necessary descriptions or explanations will be provided.

### Tests

Three tests were used in this study: The Adapted PSRS; The Cattell Culture Fair Intelligence Test, Scale 3; The Gates-MacGinite Reading Tests, Survey E, Form 3 (Speed, Accuracy, Vocabulary, and Comprehension.

The PSRS used in this study is an adaptation of Kephart's PSRS (PMS). The adaptations were made by Dr. Patrick Ashlock and this writer; the objective was to increase the difficulty of the scale to make it sufficiently challenging for high school freshmen. The reader is referred to appendixes A, B, C, and D for a detailed discussion of the adapted PSRS.

### Cattell Culture Fair Intelligence Test, Scale 3

The Culture Fair Intelligence Tests are specially designed to measure basic intellectual capacity while reducing the effects of extraneous social and environmental influences on intelligence test performance.

Scale 3 of the Culture Fair Intelligence Test is a group test of mental ability constructed for use with senior high school students and college

students.

Reliability for Scale 3 has been evaluated in terms of both the Dependability Coefficient and the Homogenity Coefficient. The Dependability Coefficient simply refers to the immediate test-retest agreement. Using the full test on 360 American high school seniors, this Coefficient was .85.

The interval between testing results in the use of Stability Coefficient, generally values are obtained around .8, though they may occasionally run as low as .6.

According to the Manual for the Cattell Tests, Buros' Mental Measurement Yearbook, show the Culture Fair has an r with the Revised Standford Benet of .56 (later studies have yielded .71), with the Otis (mean of ten groups) of .73, and with the ACE of .59.

The correlations with "g" of the four types of subtests range through .53, .68, .89, and .99.[1]

Gates-Mac Ginite Reading Tests, Survey E, Form 3

The Survey E level of the Gates-MacGinite Reading Tests is part of a new series of tests designed to cover grades one through twelve. Items for the tests were selected on the basis of a nationwide tryout that involved more than 25,000 pupils.

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[1]Raymond B. Cattell and A. K. S. Cattell, "Manual for the Cattell Culture Fair Intelligence Test," (Indianapolis, Indiana: Bobbs Merrill Co., 1959), pp. 1-6.

The following alternate form and split-half reliability coefficients are provided for the ninth grade level:

| Sub-test | Alternate Form Reliability | Split-half Reliability |
|---|---|---|
| 1. Speed | | |
| Number Attempted | .72 | |
| Number Correct | .7[illegible] | |
| 2. Vocabulary | .83 | .88 |
| 3. Comprehension | .80 | .89 |

The following are correlations between Gates-MacGinite Reading Sub-tests and Lorge - Throndike Verbal I. Q. for the ninth grade level:

| | |
|---|---|
| 1. Vocabulary - I. Q. | .84 |
| 2. Comprehension " | .77 |
| 3. Number Attempted " | .42 |
| 4. Number Correct " | .65 [2] |

[2]Arthur I. Gates and Walter Mac-Ginite, "Technical Manual for the Gates-MacGinite Reading Tests" (New York: Teacher College Press, Columbia University, 1965), pp. 1-15.

## Procedure

One hundred freshman students (fifty girls and fifty boys) taken from a regularly assigned physical education class were used as subjects. Criteria for selection was age and sex; students who deviated more than one year from the mean age of the sample were not used as subjects in order to somewhat avoid extreme age differences.

The first test administered was the adapted PSRS. Reliability to be established through an inter-rater correlation.

A physical education instructor and I were trained to evaluate performances on the adapted PSRS by Dr. Patrick Ashlock. The training consisted of the following:

1. Each rater read pages 120 to 135 of Kephart's The Slow Learner the Classroom one week and again one day before the testing program began. These pages describe the items and contain criteria for evaluation of Kephart's PSRS.

2. Each rater read sections of Ashlock and Campanaro's An Inquiry into the Feasibility of a Motor Academic Improvement Program in the High School which describes the adaptations of Kephart's PSRS, provides criteria for evaluation of the adapted PSRS, and lists the passing percentages of 100 freshmen boys on each item in the previous work.

3. Dr. Ashlock explained and discussed the adapted PSRS criteria for evaluation with the raters in a scheduled meeting. A tape-recorder was used in the meeting from which transcribed instructions were given to each rater for further study and reference.

4. The raters observed Dr. Ashlock evaluate two students who he had instructed on how to demonstrate passing and failing performances for each item.

5. The raters had two forty minute and one twenty minute practice rating trials.

The PSRS testing, for all students, was done during the student's physical education class time in the high school's gymnasium in order to keep conditions, equipment and facilities constant.

Prior to testing a class, the examiners had the students put their name, age and sex on two identical rating forms. The students were given a number which coincided with the chronological placement of their names in the class teachers roll book. Each rater received a copy of the rating forms which he initialed. The numbers were used to determine the numerical order students were to be tested.

PSRS testing was done in conjunction with regularly scheduled physical fitness testing. The students were not informed as to the nature of the PSRS: rather they were told the following:

> From your previous physical fitness tests, we have an index of your gross fitness level as compared with your classmates. We now want to include another test so that we can obtain more information about your physical skills.

In order to establish a testing procedure which can easily be replicated while emphasing minimum detraction from regular class activities, the PSRS testing was done with a portion of the class while the remainder engaged in scheduled activities.

The examiners began with the male classes, and tested ten to fifteen subjects, depending on the class size, on the entire PSRS. When testing was completed for individual subjects, they returned to scheduled activities. This procedure was used for both male and female classes.

When giving instructions or directions for items, the examiner did so orally to all members of the small testing groups before testing for that particular item or items began.

The Cattell Intelligence Test and the Gates-MacGinite were given on the same day to all students; the Cattell was administered in the morning and the Gates-MacGinite was administered in the afternoon.

# CHAPTER IV

## RESULTS, CONCLUSIONS - AND RESEARCH IMPLICATIONS

## RESULTS

In this section of chapter IV the following results of the testing are reported: (1) the interrater correlations for the forty-one items of the adapted PSRS; (2) passing percentages for adapted PSRS items (N=100), and passing percentages for male and female subjects; (3) the intercorrelations of PSRS subtests and totals with subtests and average score of the Gates-MacGinite Reading Tests; (4) the intercorrelations of PSRS subtests and totals with the Cattell Culture Fair Intelligence Test; (5) the intercorrelations of those items of the adapted PSRS which show correlations of .2 and above with the Gates-MacGinite Reading Tests; (6) and the intercorrelations of Cattell subtests and total with Gates-MacGinite subtests and average score.

All computer programs used in processing the data were obtained from the Loyola University Data Processing Department.

Multiple raters have been used by the various educational agencies and institutions using Kephart's PSRS and training techniques; up to this time, however, there has been no report on the degree of reliability of the PSRS

when an individual's performance is rated by more than one examiner.

Table I lists the Spearman Correlation Coefficient (RHO) for the forty-one items of the adapted PSRS.

The rank-difference coefficient is rather closely equivalent to the Pearson r, numerically. On the average, r is slightly greater than RHO and the maximum difference is approximately .02, when both are near .50.[1]

A main objective of this study was to expand the inquiry into the feasability of using the PSRS as a perceptual-motor instrument in the high school by including subjects of both sexes. Table II lists the passing percentages (N =100) on each item of the PSRS, and also provides passing percentages for boys and girls on each item.

On nineteen of the thirty-nine items more girls successfully passed than boys, both sexes did equally well (as far as the number who passed) on eight items, and more male than female subjects passed twelve of the items.

The boys had a better mean time (33.29 seconds) than the girls (37.224 seconds) on the obstacle course. The girls, however, had a better mean time (5.526 seconds) than the boys (6.224 seconds) on the stepping stones subtest.

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[1] J. P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw Hill Book Co. 1965), P. 306.

TABLE I

Interrater Correlation. Spearman Correlation Coefficient RHO (N=100)

| Variable | Rank Difference Correlation Coefficient RHO | Standard Error of RHO | Z Score |
|---|---|---|---|
| I Balance Board | | | |
| 1. Backward | 1.000 | 0.1005 | 9.95 |
| 2. Sidewise (Right) | 1.000 | 0.1005 | 9.95 |
| 3. Sidewise (Left) | 1.000 | 0.1005 | 9.95 |
| II Jumping | | | |
| 4. Right Foot | 1.000 | 0.1005 | 9.95 |
| 5. Left Foot | 1.000 | 0.1005 | 9.95 |
| 6. Skip | 1.000 | 0.1005 | 9.95 |
| 7. Hop 1/1 | 1.000 | 0.1005 | 9.95 |
| 8. Hop 2/2 | 1.000 | 0.1005 | 9.95 |
| 9. Hop 2/1 | 1.000 | 0.1005 | 9.95 |
| 10. Hop 1/2 | 1.000 | 0.1005 | 9.95 |
| III Identification of Body Parts | | | |
| 11. Touch your right shoulder | 1.000 | 0.1005 | 9.95 |
| 12. Touch your left hip | 0.9999 | 0.1005 | 9.95 |
| 13. Touch your left elbow | 1.0000 | 0.1005 | 9.95 |
| 14. Touch your right elbow | 1.0000 | 0.1005 | 9.95 |

TABLE I (continued)

| Variable | Rank Difference Correlation | Standard Error | Z Score |
|---|---|---|---|
| IV Imitation Of Movements | | | |
| 15. | 0.9999 | 0.1005 | 9.95 |
| 16. | 1.0000 | 0.1005 | 9.95 |
| 17. | 0.9999 | 0.1005 | 9.95 |
| 18. | 1.0000 | 0.1005 | 9.95 |
| 19. | 0.9999 | 0.1005 | 9.95 |
| V Obstacle Course | | | |
| 20. Over | 1.0000 | 0.1005 | 9.95 |
| 21. Under | 1.0000 | 0.1005 | 9.95 |
| 22. Between | 1.0000 | 0.1005 | 9.95 |
| 23. Time | 0.9952 | 0.1005 | 9.90 |
| VI Supine Patterning | | | |
| 24. Right Arm | 1.0000 | 0.1005 | 9.95 |
| 25. Right Arm and back | 1.0000 | 0.1005 | 9.95 |
| 26. Left Arm | 1.0000 | 0.1005 | 9.95 |
| 27. Left Arm and back | 1.0000 | 0.1005 | 9.95 |
| 28. Both Arms | 1.0000 | 0.1005 | 9.95 |
| 29. Both Arms and back | 1.0000 | 0.1005 | 9.95 |
| 30. Both legs | 1.0000 | 0.1005 | 9.95 |
| 31. Both legs and back | 1.0000 | 0.1005 | 9.95 |
| 32. Left Arm and leg | 1.0000 | 0.1005 | 9.95 |
| 33. Left Arm and leg back | 1.0000 | 0.1005 | 9.95 |

TABLE I (continued)

| Variable | Rank Difference Correlation Coefficient RHO | Standard Error of RHO | Z Score |
|---|---|---|---|
| VI Supine Patterning (continued) | | | |
| 34. Right arm and leg | 1.0000 | 0.1005 | 9.95 |
| 35. Right arm and left leg back | 1.0000 | 0.1005 | 9.95 |
| 36. Right arm and left leg | 1.0000 | 0.1005 | 9.95 |
| 37. Right arm and left leg back | 0.9999 | 0.1005 | 9.95 |
| 38. Left arm and right leg | 1.0000 | 0.1005 | 9.95 |
| 39. Left arm and right leg back | 0.9999 | 0.1005 | 9.95 |
| VII Stepping Stones | | | |
| 40. Pass or Fail | 0.9999 | 0.1005 | 9.95 |
| 41. Time | 0.9995 | 0.1005 | 9.95 |

TABLE II

PASSING PERCENTAGES OF PSRS ITEMS

(N=100)

| | Per cent of N Passing item | Male | Number that Failed | Passing Male | Female | Number that Failed | Passing Female |
|---|---|---|---|---|---|---|---|
| I. Balance Board | | | | | | | |
| 1. Backward | 57% | Boys | 23 | 54% | Girls | 20 | 60% |
| 2. Sidewise (R) | 94% | " | 4 | 92% | " | 2 | 96% |
| 3. Sidewise (L) | 88% | " | 5 | 90% | " | 7 | 86% |
| II. Jumping | | | | | | | |
| 4. Right Foot | 85% | " | 8 | 84% | " | 7 | 86% |
| 5. Left Foot | 88% | " | 11 | 78% | " | 1 | 98% |
| 6. Skip | 90% | " | 6 | 88% | " | 4 | 92% |
| 7. Hop 1/1 | 86% | " | 8 | 84% | " | 6 | 88% |
| 8. Hop 2/2 | 88% | " | 7 | 86% | " | 5 | 90% |
| 9. Hop 2/1 | 81% | " | 12 | 76% | " | 7 | 86% |
| 10. Hop 1/2 | 86% | " | 6 | 88% | " | 8 | 84% |
| III. Identification of body parts | | | | | | | |
| 11. Touch R. shoulder | 72% | " | 19 | 62% | " | 9 | 82% |
| 12. Touch L. hip | 78% | " | 12 | 76% | " | 10 | 80% |
| 13. Touch L. Elbow | 92% | " | 4 | 92% | " | 4 | 92% |

TABLE II (continued)

| | Per cent of N passing item | Male | Number that Failed | Passing Male | Female | Number that Failed | Passing Female |
|---|---|---|---|---|---|---|---|
| III. Identification of body parts (continued) | | | | | | | |
| 14. Touch R. Elbow | 92% | Boys | 7 | 86% | Girls | 1 | 98% |
| IV. Imitation of movements | | | | | | | |
| 15. (2)* | 51% | " | 24 | 52% | " | 25 | 50% |
| 16. (8)* | 78% | " | 12 | 76% | " | 10 | 80% |
| 17. (9)* | 83% | " | 9 | 82% | " | 8 | 85% |
| 18. (10)* | 74% | " | 12 | 76% | " | 14 | 72% |
| 19. (11)* | 78% | " | 13 | 74% | " | 9 | 82% |
| V. Obstacle Course | | | | | | | |
| 20. Over | 94% | " | 3 | 94% | " | 3 | 94% |
| 21. Under | 100% | " | 0 | 100% | " | 0 | 100% |
| 22. Between | 65% | " | 12 | 76% | " | 23 | 54% |
| 23. Time | (Mean) | | | (Mean) | | | (Mean) |
| VI. Supine Patterning | | | | | | | |
| 24. Right Arm | 88% | " | 4 | 92% | " | 8 | 84% |
| 25. Right Arm -Back | 89% | " | 3 | 94% | " | 8 | 84% |

TABLE II (continued)

| | Per Cent of N passing item | Male | Number that Failed | Passing Male | Female | Number that Failed | Passing Female |
|---|---|---|---|---|---|---|---|
| VI. Supine Patterning (continued) | | | | | | | |
| 26. Left Arm | 89% | Boys | 4 | 92% | Girls | 7 | 86% |
| 27. Left Arm - Back | 88% | " | 5 | 90% | " | 7 | 86% |
| 28. Both Arms | 91% | " | 5 | 90% | " | 4 | 92% |
| 29. Both Arms -Back | 92% | " | 4 | 92% | " | 4 | 92% |
| 30. Both Legs | 98% | " | 1 | 98% | " | 1 | 98% |
| 31. Both Legs -Back | 98% | " | 1 | 98% | " | 1 | 98% |
| 32. Left arm & leg | 76% | " | 6 | 88% | " | 18 | 64% |
| 33. Left arm & Leg-back | 79% | " | 7 | 86% | " | 6 | 88% |
| 34. Right arm & leg | 90% | " | 4 | 92% | " | 6 | 88% |
| 35. Right arm & leg-back | 95% | " | 4 | 92% | " | 1 | 98% |
| 36. Right arm & left leg | 61% | " | 23 | 54% | " | 16 | 68% |
| 37. R. arm & L. leg-back | 64% | " | 22 | 56% | " | 14 | 72% |
| 38. L. arm & R. Leg | 53% | " | 23 | 54% | " | 24 | 52% |
| 39. L. arm & R. leg-back | 59% | " | 23 | 54% | " | 18 | 64% |
| VII. Stepping Stones | | | | | | | |
| 40. | 38% | " | 27 | 46% | " | 35 | 30% |
| 41. Total Mean Time | 5.875 | " | | 6.224 | " | | 5.526 |

*Number of exercises in The Slow Learner In The Classroom, p. 132.

The lower mean time on the obstacle course for the male subjects is more significant, in regard to successfully passing the items, than the lower female mean time on the stepping stones subtest. Only 30 percent of the female subjects passed the stepping stones subtest as compared to 46 percent of the boys. Both sexes did equally well on the over and under items of the obstacle course, 94 percent and 100 percent passed each item. More boys than girls successfully passed the between item, 76 percent and 54 percent respectively.

The boys did not prevail in any particular subtest, but the girls' passing percentage on six of the seven items in the jumping subtest was greater also, the girls' passing percentages on three of the four items in the identification of body parts subtest were higher than the male subjects.

The total mean score for the PSRS (N=100) was 31.33, the mean scores for females was 31.54, and the mean score for males was 31.12.

Previous investigations reported in the literature indicate that there are relationships between perceptual-motor training and reading achievement, and relationships between individual items of Kephart's PSRS and reading.

McCormick, for example, reported that groups receiving perceptual motor training showed gains in reading averaging over .2 grade levels.[2]

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[2] McCormick, loc. cit.

Dunsing, also, reported that he found jumping, skipping and hopping items of Kephart's PSRS related to reading achievement in one school district. [3]

It must be noted that there is a distinction between perceptual-motor training activities and individual PSRS items. The training programs may or may not use or stress particular PSRS items. On the other hand, PSRS items may be combined as part of a series of perceptual-motor items to form a single training activity.

It became necessary then to test the intercorrelations of individual PSRS items and groups of items with reading subtests and totals in order to determine what PSRS items and subtests are in fact related to reading achievement.

The results of correlation coefficients for reading performance and each PSRS subtest and total PSRS scores were computed by an IBM 1410 computer and the results are reported in table III.

Levels of significance were also computed by the IBM 1410 computer using the following equation for t tests of significance.

$$t = \frac{r}{\sqrt{1-r}} \sqrt{N-2}$$

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[3] Dunsing, loc. cit.

Where t = the ratio with N-2 degrees of freedom.

r= the observed sample value of the correlation coefficient.

n= the number of pairs of observations in the sample.

The t obtained from this formula is distributed in accordance with the values of t with degrees of freedom equal to n-2; once the value of t was obtained, the t table was used to determine whether it was significant at the 5 or 1 percent levels.[4] Levels of significance are reported for intercorrelations of .2 or more.

In table III it will be seen that the only adapted PSRS subtest which showed intercorrelations of .2 or above with subtests and totals of the Gates-MacGinite Reading Tests was Subtest II, Jumping.

The following are the intercorrelations of the PSRS Jumping Subtest with the Gates-MacGinite Reading Tests: 0.2512 with Speed and Accuracy Number Attempted, t value of 2.5691, significant beyond the .05 level of confidence; 0.2313 with Speed and Accuracy Number Right t value of 2.3535 significant beyond the .05 level of confidence; 0.2133 with Vocabulary, t value of 2.1613, significant beyond the .05 level of confidence; and 0.2490 with the Average Score of the Gates-MacGinite Reading tests, t value of 2.5451, significant beyond the .05 level of confidence.

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[4] Allen L. Edwards, Statistical Methods for the Behavioral Sciences (New York: Holt, Rinehart and Winston, 1961), P. 301-303.

TABLE III

Intercorrelation Matrix for Reading Performances on Gates-MacGinite Reading Tests with Subtests I, II, III, IV, and totals of adapted PSRS. (N=100)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. PSRS Subtest I Balance | 1.0000 | 0.1318 | 0.0662 | -0.0425 | -0.1349 | -0.1965 | -0.0063 | -0.0908 | -0.1165 |
| 2. PSRS Subtest II Jumping | ------ | 1.0000 | 0.1468 | 0.1629 | 0.2512 | 0.2313 | 0.2133 | 0.1554 | 0.2490 |
| 3. PSRS Subtest III Identification of Body Parts | ------ | ------ | 1.0000 | -0.0491 | -0.0837 | -0.0918 | -0.0776 | -0.0480 | -0.0503 |
| 4. PSRS Subtest IV Imitation of Movements | ------ | ------ | ------ | 1.0000 | 0.1630 | 0.1703 | 0.1048 | 0.1808 | 0.1778 |
| 5. Speed & Accuracy Number attempted Gates-MacGinite | ------ | ------ | ------ | ------ | 1.0000 | 0.9449 | 0.4729 | 0.4445 | 0.8500 |
| 6. Speed & Accuracy Number right | ------ | ------ | ------ | ------ | ------ | 1.0000 | 0.5508 | 0.5383 | 0.8892 |
| 7. Vocabulary | ------ | ------ | ------ | ------ | ------ | ------ | 1.0000 | 0.6590 | 0.7485 |
| 8. Comprehension | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 1.0000 | 0.7298 |
| 9. Average Score - Gates-MacGinite | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 1.0000 |

TABLE III CONTINUED

Intercorrelation Matrix for Reading Performances on Gates-MacGinite Reading Tests with Subtests V, VI, VII and totals of adapted PSRS. (N=100)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. PSRS Subtest V Obstacle Course | 1.0000 | 0.0038 | 0.0105 | -0.0641 | -0.1908 | -0.1704 | -0.0222 | -0.1195 | -0.1538 |
| 2. PSRS Subtest VI Supine Patterning | ------ | 1.0000 | 0.1849 | 0.7297 | 0.0861 | 0.0501 | 0.0956 | -0.0480 | 0.0351 |
| 3. PSRS Subtest VII Stepping Stones | ------ | ------ | 1.0000 | 0.2393 | -0.0088 | -0.0640 | 0.0018 | -0.0681 | -0.1073 |
| 4. PSRS Total Scores | ----- | ------ | ------ | 1.0000 | 0.0945 | 0.0926 | 0.0908 | -0.0363 | 0.0836 |
| 5. Speed & Accuracy Number attempted Gates-MacGinite | ------ | ------ | ------- | ------ | 1.0000 | 0.9449 | 0.4729 | 0.4445 | 0.8500 |
| 6. Speed & Accuracy Number Right | ------ | ------ | ------ | ------ | ------ | 1.0000 | 0.5508 | 0.5383 | 0.8892 |
| 7. Vocabulary | ------ | ------ | ------ | ------ | ------ | ------ | 1.0000 | 0.6590 | 0.7485 |
| 8. Comprehension | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 1.0000 | 0.7298 |
| 9. Average Score of Gates-MacGinite | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 1.0000 |

Intercorrelations between subtests of the Gates-MacGinite need not be reported here. For a thorough statistical discussion of the Gates-MacGinite Reading Tests the reader is referred to the Technical Manual for the Gates - MacGinite Reading Tests.

Intercorrelations of . 2 or above between specific PSRS items and/or subtests and Average Score of the Gates-MacGinite Reading Tests are reported in table IV. All four PSRS items are part of Subtest II, Jumping. Item number four, Jump on right foot, had the most (4) intercorrelations at . 2 or above with the Gates-MacGinite Reading Tests. The intercorrelations are as follows: 0. 2564 with Speed and Accuracy Number Attempted, t value of 2. 626, significant beyond the . 05 level of confidence; 0. 2760 with Speed and Accuracy Number Right, t value of 2. 8426, significant beyond the . 01 level of confidence; 0. 2227 with Vocabulary, t value of 2. 2614 significant beyond the . 05 level of confidence; and 0. 2245 with the Average Score of the Gates-MacGinite Reading Tests, t value of 2. 2806, significant beyond the . 05 level of confidence.

Item number seven, Hop once on right foot and once on left foot showed three intercorrelations at . 2 or above with the Gates-MacGinite subtest as follows: 0. 2126 with Speed and Accuracy Number Attempted, t value of 2. 1538, significant beyond the . 05 level of confidence; 0. 2226 with comprehension, t value of 2. 2612, significant beyond the . 05 level of confidence;

## TABLE IV

Table of PSRS items that correlate higher with Reading subtests and totals than other PSRS items.

| | | Speed & Accuracy Number attempted | Speed & Accuracy Number right | Compre-hension | Vocabulary | Average Score |
|---|---|---|---|---|---|---|
| (4) | 1. Jump - Right foot | 0.2564 | 0.2760 | ----- | 0.2227 | 0.2245 |
| (5) | 2. Jump - Left foot | 0.2037 | ----- | ----- | ----- | ----- |
| (7) | 3. Hop 1/1 | 0.2126 | ----- | 0.2226 | ----- | 0.2599 |
| (8) | 4. Hop 2/2 | ----- | ----- | ----- | 0.2605 | ----- |

and0. 2599 with the Average Score of the Gates-MacGinite Reading Tests, t value of 2. 6644 significant beyond the . 01 level of confidence.

Items number five, Jump on left foot. and number eight, Hop twice on right foot and twice on left foot, showed one intercorrelation at . 2 or abowe. The intercorrelations are as follows: for item number five 0. 2037 with Speed and Accuracy Number Attempted, t value of 2. 0597, significant beyond the , 05 level of confidence; and for item number eight 0. 2605 with Vocabulary, t value of 2. 6710, significant beyond the . 01 level of confidence.

No intercorrelations of . 2 or above were found between any part of the adapted PSRS and any part of the Cattell Culture Fair Intelligence Tests as table V indicates.

Several intercorrelations at . 2 and above were found between subtotals and average score of the Gates-MacGinite Reading Tests and the Cattell Culture Fair Intelligence Test. The intercorrelations are as follows: Speed and Accuracy Number Attempted: 0. 2571 with the Cattell Total of Part II, t value 2. 6336, significant beyond the . 01 level of confidence, and 0. 2361 with the Cattell Total Score, t value 2. 4052. significant beyond the . 05 level of confidence; Speed and Accuracy Number Right: 0. 2058 with the Cattell total of Part I, t value 2. 0818, significant beyond . 05 level of confidence, 0. 3182 with the Cattell Total of Part II, t value 3. 3227. significant beyond the . 01 level of confidence, and 0. 2926 with the total Cattell Score, t value of 3. 0291,

TABLE V

Intercorrelation Matrix for Subtotals and Totals of the Cattell Culture Fair Intelligence Test with Subtests and Totals of adapted PSRS. (N=100)

| | 1 | 2 | 3 | 4 | 5 | 6 | |
|---|---|---|---|---|---|---|---|
| 1. PSRS Subtest I | 1.0000 | 0.1318 | 0.0662 | - 0.0425 | - 0.0342 | 0.0335 | (con't) |
| 2. PSRS Subtest II | ------ | 1.0000 | 0.1486 | 0.1629 | - 0.1012 | 0.0335 | (con't) |
| 3. PSRS Subtest III | ------ | ------ | 1.0000 | - 0.0491 | 0.1666 | 0.1247 | (con't) |
| 4. PSRS Subtest IV | ------ | ------ | ------ | 1.0000 | -0.0088 | 0.1748 | (con't) |
| 5. PSRS Subtest V | ------ | ------ | ------ | ------ | 1.0000 | 0.0038 | (con't) |
| 6. PSRS Subtest VI | ------ | ------ | ------ | ------ | ------ | 1.0000 | (con't) |
| 7. PSRS Subtest VII | ------ | ------ | ------ | ------ | ------ | ------ | (con't) |
| 8. PSRS Total Score | ------ | ------ | ------ | ------ | ------ | ------ | (con't) |
| 9. Cattell Total Part I | ------ | ------ | ------ | ------ | ------ | ------ | (con't) |
| 10. Cattell Total Part II | ------ | ------ | ------ | ------ | ------ | ------ | (con't) |
| 11. Cattell Total Score | ------ | ------ | ------ | ------ | ------ | ------ | (con't) |

TABLE V CONTINUED

Intercorrelation Matrix for Subtotals and Totals of the Cattell Culture Fair Intelligence Test with Subtests and Totals of adapted PSRS. (N=100)

| | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|
| 1. PSRS Subtest I | 0. 1151 | 0. 2056 | -0. 0197 | - 0. 0957 | -0. 0592 |
| 2. PSRS Subtest II | 0. 1411 | 0. 6210 | 0. 0904 | 0. 0321 | 0. 0707 |
| 3. PSRS Subtest III | 0. 0280 | 0. 2883 | 0. 0934 | - 0. 0152 | 0. 0524 |
| 4. PSRS Subtest IV | 0. 0806 | 0. 2519 | 0.1003 | 0. 0992 | 0. 1113 |
| 5. PSRS Subtest V | 0. 0105 | - 0. 0641 | - 0. 1225 | 0. 0096 | -0. 0708 |
| 6. PSRS Subtest VI | 0. 1849 | 0. 7297 | 0. 1345 | 0. 0679 | 0. 1166 |
| 7. PSRS Subtest VII | 1. 0000 | 0. 2393 | - 0. 0008 | 0. 0265 | 0. 0130 |
| 8. PSRS Total Score | ----- | 1. 0000 | 0. 1155 | 0. 1273 | 0. 0831 |
| 9. Cattell Total Part I | ----- | ----- | 1. 0000 | 0. 5094 | 0. 8931 |
| 10. Cattell Total Part II | ---- | ----- | ----- | 1. 0000 | 0. 8114 |
| 11. Cattell Total Score | ---- | ----- | ----- | ----- | 1. 0000 |

TABLE VI

Intercorrelation Matrix for Gates-MacGinite Reading Tests with subtotals and totals of the Cattell Culture Fair Intelligence Test. (N=100)

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1. | Speed & Accuracy Number attempted | 1.0000 | 0.9449 | 0.4729 | 0.4445 | 0.8500 | 0.1673 | 0.2571 | 0.2361 |
| 2. | Speed & Accuracy Number right | ------ | 1.0000 | 0.5508 | 0.5383 | 0.8892 | 0.2058 | 0.3182 | 0.2926 |
| 3. | Vocabulary | ------ | ------ | 1.0000 | 0.6590 | 0.7485 | 0.2752 | 0.4449 | 0.4020 |
| 4. | Comprehension | ------ | ------ | ------ | 1.0000 | 0.7298 | 0.2625 | 0.3671 | 0.3537 |
| 5. | Average Score on Gates-MacGinite | ------ | ------ | ------ | ------ | 1.0000 | 0.2355 | 0.4126 | 0.3598 |
| 6. | Cattell Total Part I | ------ | ------ | ------ | ------ | ------ | 1.000 | 0.5094 | 0.8931 |
| 7. | Cattell Total Part II | ------ | ------ | ------ | ------ | ------ | ----- | 1.0000 | 0.8114 |
| 8. | Cattell Total Score | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 1.0000 |

significant beyond the . 01 level of confidence; Vocabulary: 0. 2752 with the Cattell Total of Part I, t value 2. 8337, significant beyond the . 01 level of c onfidence, 0. 4449 with the Cattell Total of Part II, t value 4. 9178, significant beyond the . 01 level of confidence, and 0. 4020 with the Cattell Total Score, t value of 4. 3462, significant beyond the . 01 level of confidence; Comprehension: 0. 2625 with the Cattell total of Part I, t value of 2. 6930, significant beyond the . 01 level of confidence, 0. 3671 with the Cattell total of Part II, t value of 3. 9068, significant beyond the . 01 level of confidence, and 0. 3537 with the Cattell Total Score, t value of 3. 7434 significant beyond the . 01 level of confidence; Average Score on the Gates-MacGinite Reading Tests: 0. 2355 with the Cattell Total of Part I, t value of 2. 3987, significant beyond the . 05 level of confidence, 0. 4126 with the Cattell total of Part II, t value of 4. 4840, significant beyond the . 01 level of confidence, and 0. 3598 with the Cattell Total Score, t value of 3. 8174, significant beyond the . 01 level of confidence.

## CONCLUSIONS

The subjective nature of the PSRS after extensive training became more objective in that the two examiners were more able to settle on a pass or fail score.

Because of the high interrater correlation it may be assumed that two trained raters could establish or obtain a respectably high reliability for the adapted PSRS. It is questionable, however, that classroom teachers

could obtain as high a degree of agreement by simply reading Kephart's evaluative criteria without further extensive training.

By including subjects of both sexes the inquiry into the use of the PSRS at the ninth grade level was expanded. It was found that the girls as a group obtained a slightly higher mean score on the adapted PSRS than did boys, 31.54 and 31.12 respectively. It may be assumed then that the PSRS could be administered to subjects of both sexes without fear of an internal sex bias. This high mean score for both sexes, however, indicates that the PSRS has not attained a level of difficulty suitable for the ninth grade level.

The writer can propose only two explanations for the low intercorrelations between the adapted PSRS and the Gates-MacGinite Reading Tests. In chapter I it was noted that there is no reported research using perceptual-motor concepts with high school students; however, an explanatory investigation under the sponsorship of the federal government conducted by Ashlock indicated that Kephart's PSRS was not sufficiently difficult for high school students. By attempting to increase the difficulty of the PSRS, perceptual-motor items may have been distorted. Kephart in a personal interview regarding this work, suggested the possibility that the purity of perceptual-motor skills that compose the PSRS may become clouded by alteration or combination. [5]

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[5]Statement by Newell C. Kephart, personal interview.

It is interesting to note that the only PSRS items and subtests (items 4, 5, 7, 8 and subtest II) which showed an intercorrelation of .2 or above with the Gates-MacGinite Reading Tests were not changed from Kephart's original scale. This slight relationship between the Jumping items and reading are in accord with Dunsing's findings mentioned earlier. The Jumping subtests needs further analization in this area, this and other implications for further research will be discussed more fully in the next section of this chapter.

The other point that must be considered is that perceptual-motor skills may not relate to cognitive development as strongly for high school students as they do for elementary students. Through the normal process of growth and maturation, environmental, emotional and social factors, to name a few, may serve to reduce the effect that perceptual-motor development may have on higher cognitive development.

Kephart's work has been done, in the main, with primary grade students. He has, however, recommended and encouraged the use of his concepts with children at all grade levels. With these ideas in mind, this study was conducted using high school freshmen who may or may not have had learning problems. This approach was used aspiring to determine whether PSRS test-score patterns could be used to differentiate between youngsters who may have perceptual-motor-based learning (reading) problems and those

who do not.

In table III it will be seen that the intercorrelations between the adapted PSRS and the Gates-MacGinite Reading Tests were negligible. Because of these low intercorrelations, it may be assumed that adapted PSRS test score patterns cannot be used to identify or isolate ninth grade students who have perceptual-motor-based reading problems.

The Cattell Culture Fair Intelligence Test was used in this study for two important reasons: (1) one of Dunsing's recommendations in concluding his report of a cooperative study investigating the relationship of reading with Kephart's PSRS in the elementary school was that the Cattell or a similar non-verbal intelligence test be used in future studies involving reading achievement and intelligence; (2) another important reason for the selection of a test of this type was that the visual-perceptual nature of the Cattell could possibly serve as a link between the PSRS and a test of reading which requires a highly developed skill in the visual perceptual area.

From the results found in the intercorrelation matrixices between the adapted PSRS, the Cattell Culture Fair Intelligence Test, and the Gates-MacGinite Reading tests, it may be assumed that the Cattell subtests and totals cannot be used as guidelines for indicating relationships between PSRS tests and reading achievement.

Dunsing found an intercorrelation of .51 between the Reading Comprehen-

sion score of the Iowa test of Basic skills, Form 1 and the California Test of Mental Maturity-Short form. He found an intercorrelation of . 80 between the Iowa Test of Basic Skills, Form 2, and the Otis Quick-Scoring Test of Intelligence. He also found an intercorrelation of . 81 between the combined scores of Rate, Comprehension, Directed Reading and Paragraph Meaning of the Iowa Silent Reading Tests with the Otis Quick-Scoring Test of Intelligence.[6]

As can be seen in table VI, the Vocabulary Subtest of the Gates-MacGinite had the highest intercorrelation with the Cattell Culture Fair Intelligence Test. The Comprehension Subtest in this study had a lower intercorrelation with the Cattell than did the comprehension subtests with the intelligence tests used in Dunsing's study.

The Average Score of the Gates-MacGinite had a lower intercorrelation with the Cattell Intelligence Test than did the combined scores of the Iowa Silent Reading Tests with the Otis Quick-Scoring Test of Intelligence.

It appears, then, that Dunsing's suspicion; "that the similarity between reading and verbal intelligence test instruments inflates the reported relationships" has some basis.[7]

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[6] Dunsing, OP. Cit. P. 27

[7] Ibid. P. 27.

## RESEARCH IMPLICATIONS

The results of this study raise a number of questions for further study. In this section, some of the potentialities for further research are listed.

1. Research needs to be done to determine how closely classroom teachers using only Kephart's evaluative criteria correlate on rating subjects.
2. Kephart's PSRS needs to be evaluated and tested at every successive elementary grade with achieving and non-achieving students to discover at what level and with what type of student it is an effective perceptual-motor instrument.
3. The adapted PSRS needs to be administered to high school students reading and achieving below grade and ability level to determine if it can be a discriminating instrument with this type of student.
4. Kephart's PSRS and the adapted PSRS need to be correlated with tests of perception (i. e. visual, etc. ) to further investigate Kephart's theory of perception.
5. The Jumping items and subtest of the PSRS should be further analyzed to determine if characteristics which produced slight relationships with reading can further be expanded.

# CHAPTER V

## SUMMARY

Recent research has indicated that perceptual-motor training and items of Kephart's Perceptual Survey Rating Scale (PSRS) are related to reading achievement at the elementary school level. There have been, however, no reported studies investigating the potentialities of this approach to learning (Reading) at the high school level.

This study stems from an adaptation of Kephart's PSRS which aspired to increase the difficulty of the scale making it a discriminating perceptual-motor instrument at the ninth grade level. At the time of the adaptation there was no evidence whether performances on the adapted PSRS items did in fact discriminate between those high school freshmen who had perceptual-motor associated learning problems and those who did not.

The adapted form of Kephart's PSRS, the Gates-MacGinite Reading Tests, Survey E, Form 3, and the Cattell Culture Fair Intelligence Test, Scale 3, were administered to 100 freshmen students (50 boys and 50 girls).

The purposes of the study were the following:

1. To obtain a preliminary standardization (reliability and passing criteria) on the adapted PSRS.

2. To expand the inquiry into the feasibility of an adaptation of the PSRS suitable for ninth grade students by including the use of subjects of both sexes.

3. To test the intercorrelations of the scores obtained from an administration of the three previously mentioned tests.

The study further sought to determine whether adapted PSRS test score patterns could be used to differentiate between youngsters who hadve perceptual-motor-based learning (reading) problems and those who do not.

On the basis of the results of this study it was concluded that trained examiners could administer the PSRS with high degree of agreement on items; (2) the adapted PSRS does not present a high enough degree of difficulty for ninth grade students; (3) the adapted PSRS was not related to reading achievement as measured by the Gates-MacGinite Reading Tests; (4) the Cattell Culture Fair Intelligence Test could not be used as a guide-line when investigating the relationship of the adapted PSRS and reading achievement; and (5) the adapted PSRS could not be used to differentiate between youngsters who have perceptual-motor-based learning problems and those who do not.

The results of this study suggested the following potentialities for further research.

1. Research needs to be done to determine how closely classroom teachers using only Kephart's evaluative criteria correlate on rating subjects.
2. Kephart's PSRS needs to be evaluated and tested at every successive elementary grade with achieving and non-achieving students to discover at what level and with what type of student it is on effective perceptual-motor instrument.
3. The adapted PSRS needs to be administered to high school students reading and achieving below grade and ability level to determine if it can be a discriminating instrument with this type of student.
4. Kephart's PSRS and the adapted PSRS need to be correlated with tests of perception (i.e. visual, etc.) to further investigate Kephart's theory of perception.
5. The Jumping items and subtest of the PSRS should be further analyzed to determine if characteristics which produced slight relationships with reading can further be expanded.

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# APPENDIX

# APPENDIX A

## Adaptation of the Perceptual Survey Rating Scale
## by
## Dr. Patrick Ashlock and Mario Campanaro

Since Kephart's Perceptual Survey Rating Scale is only for young children, certain adaptations had to be made to make the scale more difficult. Otherwise, most youngsters at the high school level would pass it. Since at the time of the adaptation we were working only with freshman boys, we adapted some of the items to make them, in our judgment discriminating at that level. We wish to emphasize that we were only attempting to increase the difficulty of the test items. We had no evidence at that time to indicate whether performances on the items discriminated between those freshmen who had motor-associated learning problems and those who did not.

At this point, a detailed description of the adaptation of the tasks seems to be in order. For a presentation of the original Perceptual Survey Rating Scale, the reader is referred to Part 2 of Kephart's Slow Learner in the Classroom. Unless otherwise noted, testing and evaluation procedures are the same as in Kephart's original scale.

In place of Kephart's walking board, we used a balance board placed approximately eighteen inches from the floor. The procedure used was the same as Kephart's.

The jumping tasks were carried out in the same manner as in the original scale.

The identification of body parts from the original scale was altered in two ways. First, items such as "Touch your shoulders, hips, ankles, ears, feet, eyes, and elbows" were changed to commands to touch the right shoulder, the left hip, etc. Second, the boys carried out their commands while running in place. Noted as failures were inabilities to locate the correct body part, left-right confusion and the necessity to cease running in position while locating the body part.

The imitation of movements tasks were carried out as in the original scale, but the youngsters were instructed to always reverse the left or right arm positions in the pattern. If the reversal was not carried out after the instruction was given, the response was considered to be a failure.

The obstacle course part of the scale was replaced by a multiple obstacle course.

The performer has a running start of ten feet before the stop watch is started. The performer executes a forward roll on a mat placed twenty feet from the starting line and continues another 40 feet to a chair. He passes the left side of the chair and turns sharply to the right and toward to chairs thirty feet distant. The student executes a figure "8" turn around the chairs (chairs are three feet apart). The next component of the course is a shuttle run between two lines thirty feet apart -- each line is touched three times. At

the end of the shuttle run, the performer passes under a crossbar approximately three feet high. He then circles a chair five feet past the crossbar, and proceeds along a diagonal line toward another crossbar thirty feet away. The second crossbar is approximately 18 inches in height and at right angles to the diagonal line. The student jumps over the bar, continues along the diagonal line for another thirty feet, and performs a pirouette in the air. The student completes the course by running the remaining 15 feet to the finish line.

The task name "Angels-in-the-Snow" was changed to "Supine Patterning." This was done because we use the names of scale sections in the presence of the boys, and we had a suspicion that "Angels-in-the-Snow" might not go down the teen-age throat too easily. Instead of pointing to the arm or leg to be moved, we gave the commands verbally, using the terms left and right. We also scored the initial and return movements separately.

The stepping stones test was carried out as in the original scale, except that the boys were instructed as to which colored square was for the right foot and which for the left foot. No visual cues were given, but the boys' feet were placed correctly on the first two squares before the test was begun. In addition to scoring the boys as Kephart suggested, we recorded the time taken by each boy to complete the task.

Since we were working this program into the boys' regular gym activities, we dispensed with the chalkboard, ocular pursuits, and visual achievement

form parts of the scale. We were interested in limiting our investigation purely to perceptual-motor skills rather than including visually-oriented perceptual-motor skills.

Summary of evaluative criteria for adapted PSRS.

Student fails if he or she:

I Balance Board.

a. Falls off.

b. Looks back consistently.

c. Runs off the board in order to keep from falling

d. Measures with feet (sliding lead foot against stationary foot).

e. Crosses legs on sidewise after instruction.

II. Jumping

a. Begins or finishes on wrong foot.

b. Non-rhythmetical pattern.

c. Hops the wrong number of times.

d. Loses balance and touches floor with both feet.

III. Identification of Body Parts.

a. Inability to locate correct body part.

b. Left - right confusion.

c. Ceases to run in position while locating the body part.

IV. Imitation of Movements.

a. Fails to carry out the reversal.

b. Begins or executes a wrong arm movement.

V. Obstacle Course.

a. Touches chairs on figure "8".

b. Touches bar with any part of body and or touches floor with hand.

c. Touches bar with any part of the body on over part.

VI. Supine Patterning.

a. Moves the wrong limb.

b. Raises wrist or heels from floor when executing movement.

VII. Stepping Stones.

a. Places wrong foot on a square.

b. Misses a square.

# APPENDIX B

## Perceptual Survey Rating Scale

The following PSRS is an adaptation of Kephart's PSRS by Dr. Patrick Ashlock and Mario Campanaro. This scale was used in an exploratory investigation to determine which items were acceptable, in degree of difficulty, for the ninth grade level:

A. Balance Board

1. Forward
2. Backward
3. Sideways

B. Jumping

1. Both Feet
2. Right Foot
3. Left Foot
4. Skip
5. Hop 1/1
6. Hop 2/2
7. Hop 2/1
8. Hop 1/2

C. Identification of Body Parts

1. Touch your right shoulder
2. Touch your left hip
3. Touch your head
4. Touch your left ankle
5. Touch your right ear
6. Touch your left shoulder
7. Touch your left foot
8. Touch your right eye
9. Touch your left elbow

C. Identification of Body Parts (Continued)

10. Touch your mouth
11. Touch your right hip
12. Touch your right ankle
13. Touch your left ear
14. Touch your right foot
15. Touch your left eye
16. Touch your right elbow

D. Imitation of Movements

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____

E. Obstacle Course

1. Over
2. Under
3. Between

F. Supine Patterning

| | | |
|---|---|---|
| 1. | Right arm | Back |
| 2. | Left arm | Back |
| 3. | Right leg | Back |
| 4. | Left leg | Back |
| 5. | Both arms | Back |

F. Supine Patterning (Continued)

6. Both legs Back
7. Left arm and left leg Back
8. Right arm and right leg Back
9. Right arm and left leg Back
10. Left arm and right leg Back

G. Stepping Stones

Comments:

H. Kraus - Weber Tests

Test 1. _____
Test 2. _____
Test 3. _____
Test 4. _____
Test 5. _____
Test 6. _____
Test 7. _____

# APPENDIX C

Passing percentages of 100 freshman boys on adapted PSRS used in exploratory investigation

A. Balance Board

| | | |
|---|---|---|
| 1. | Forward | 99% |
| 2. | Backward | 51% |
| 3. | Sideways | 76% |

B. Jumping

| | | |
|---|---|---|
| 1. | Both Feet | 93% |
| 2. | Right Foot | 77% |
| 3. | Left Foot | 70% |
| 4. | Skip | 79% |
| 5. | Hop 1/1 | 87% |
| 6. | Hop 2/2 | 86% |
| 7. | Hop 2/1 | 74% |
| 8. | Hop 1/2 | 73% |

C. Identification of Body Parts

| | | |
|---|---|---|
| 1. | Touch your right shoulder | 77% |
| 2. | Touch your left hip | 89% |
| 3. | Touch your head | 100% |
| 4. | Touch your left ankle | 95% |
| 5. | Touch your right ear | 95% |
| 6. | Touch your left shoulder | 98% |
| 7. | Touch your left foot | 98% |
| 8. | Touch your right eye | 91% |
| 9. | Touch your left elbow | 87% |
| 10. | Touch your mouth | 100% |
| 11. | Touch your right hip | 96% |
| 12. | Touch your right ankle | 96% |
| 13. | Touch your left ear | 97% |
| 14. | Touch your right foot | 97% |

C. Identification of Body Parts (Continued)

| | | |
|---|---|---|
| 15. | Touch your left eye | 97% |
| 16. | Touch your right elbow | 80% |

D. Imitation of Movements

| | |
|---|---|
| 1. | 100% |
| 2. | 88% |
| 3. | 100% |
| 4. | 90% |
| 5. | 98% |
| 6. | 91% |
| 7. | 96% |
| 8. | 87% |
| 9. | 86% |
| 10. | 82% |
| 11. | 83% |
| 12. | 98% |
| 13. | 100% |
| 14. | 91% |
| 15. | 91% |
| 16. | 91% |
| 17. | 96% |

E. Obstacle Course

| | | | |
|---|---|---|---|
| 1. | Over | 89% | Time Range: 25-48 seconds |
| 2. | Under | 78% | Mean average |
| 3. | Between | 58% | time: 33.04 seconds |
| | | | N=91 |

F. Supine Patterning

| | | | | |
|---|---|---|---|---|
| 1. | Right arm | 71% | Back | 84% |
| 2. | Left arm | 89% | Back | 94% |
| 3. | Right leg | 99% | Back | 100% |
| 4. | Left leg | 94% | Back | 98% |
| 5. | Both arms | 87% | Back | 96% |
| 6. | Both legs | 99% | Back | 100% |
| 7. | Left arm and left leg | 71% | Back | 84% |
| 8. | Right arm and right leg | 83% | Back | 83% |
| 9. | Right arm and left leg | 59% | Back | 67% |

F. Supine Patterning (Continued)

10. Left arm and right leg 58% Back 65%

G. Stepping Stones

Comments:

76% passed

Time range: 4.6 - 11.5 seconds
Mean average time 6.6 seconds
N=71

H. Kraus - Weber Tests

1. 86%
2. 94%
3. 94%
4. 97%
5. 91%
6. 83%

# APPENDIX D

## The PSRS used in this study

The PSRS used in this study contains only those items which were passed by 89% or less of the sample (N=100) in the exploratory investigation. The reader will note that all items in subtest VI, Supine Patterning, were retained; this was done in order to avoid a disruption of the natural order of this subtest.

I. Balance Board

1. Backward
2. Sideways (Right and left)

II. Jumping

1. Right Foot
2. Left Foot
3. Skip
4. Hop 1/1
5. Hop 2/2
6. Hop 2/1
7. Hop 1/2

III. Identification of Body Parts

1. Touch your right shoulder
2. Touch your left hip
3. Touch your left elbow
4. Touch your right elbow

IV. Imitation of Movements

1. (2)*
2. (8)*
3. (9)*

IV. Imitation of Movements (Continued)

4. (10)*
5. (11)*

*Numbers of exercises in The Slow Learner in the Classroom, p. 132

V. Obstacle Course

1. Over
2. Under
3. Between
4. Time

VI. Supine Patterning

1. Right Arm
2. Back
3. Left Arm
4. Back
5. Both Arms
6. Back
7. Both Legs
8. Back
9. Left arm and leg
10. Back
11. Right arm and leg
12. Back
13. Right arm and left leg
14. Back
15. Left arm and right leg
16. Back

VII. Stepping Stones

1. Pass
2. Time
3. Fail

# APPENDIX E

## Transcribed Notes of Conference Held

## Between Raters

A: "All right, on this balance board, thing thing to use is the balance board that you did before. Put the subject on one end and walk backwards.

"I did note from re-reading the book not to let them cross their legs in going sidewise, but you don't mark it a failure at first. You just tell them not to cross legs and then if they do it again, after they are told, you fail them. You might tell them at the beginning not to, and if they do it anyway then you check it wrong.

"Let's get our checking straightened out. Are we going to mark 'O. K.' and check marks, or plus or minuses, or how are we going to do it?"

C: "Let's just put a check mark if the subject passes and leave it blank if he fails -- or write in 'fail.'"

A: "I don't care just as long as you are both doing the same thing."

P: "Just check if he passes or we could leave it blank if he passes."

A: "You should fill in every line because when there is a kid absent or who misses a part of the test we have to go back."

C: "That's true. All right, a check if he passes, and if he fails we'll just write 'fail.'"

A: "Why don't you do it plus or minus? Why don't you put a plus if he passes and a minus if he fails?"

P: "Plus or minus, that is simple enough."

A: "I think it would be easier to do it; or no, I know a better way than that. Let's put a 'one' a number 'one' if the subject passes and

"a 'zero' if he fails. And then it can be put right on your IBM cards in that form and your statistics person won't have to change things. A number 'one' if he passes, 'zero' he fails, and then they can punch that directly onto the IBM cards. That will make it simpler."

C: "Now, are we going to demonstrate this balance board beforehand?"

A: "no."

C: "Nothing at all?"

A: "No, you will just tell the subject to walk backward and then sidewise. Now....I don't feel that looking backward once or twice fails the kid. But, if he looks backward all the time, then I think it is a failing performance. But he may look backward once or twice just because he doesn't know how long the beam is and he is afraid that he might fall off. But if he has to look backward constantly to see how his feet are going, then he fails the item."

P: "Oh, I see."

A: "If he falls off balance, obviously he fails the item. But, if he loses his balance and then catches himself, I consider that passing. If he catches himself and does not fall off the beam, that is. Now the footwork he has to do is actually step back and not inching away. Now if he does this demonstrating measure with his feet, that is failing. He has to actually make a step so there is some space between his feet as they go back because some kids will measure one foot right against the other and this is not really passing the item. Other than that, I don't think you will have any trouble."

A: "Like this (demonstrating) measure because some kids will slide, never taking their feet off the board."

P: "Nor can they shuffle their feet."

A: "That's right."

P: "Because it has to be step by step."

A: "All right, and if they do this shuffling or sliding bit then that is a failing item. And they also fail if they fall off the beam. So that's that."

A: "Also, be sure, absolutely sure, that you two initial every sheet. In this way we know which ones each of you did."

P: "I have one question."

A: "Yes?"

P: "If a student is absent on the day that these tests are given, what then?"

C: "We'll have to test them when they come in."

P: "We will test them individually."

A: "Yes. Because we are low on boys."

P: "Oh, I see."

A: "So that we can see that we have to pick up kids. All right the jumping. This is a little bit different than the way we did it before -- have the kid stand on his right foot and jump. Did we do that? O. K. Have him stand on his right foot and land on his right foot for the right foot jump. If he doesn't land on the right foot, if he has to touch the other foot down to get his balance when he lands, he fails."

C: "One thing I did, I told them, 'jump on your right foot, land on your right foot. Do that again.'"

A: Now if they start, if you say, stand on your right foot, jump and land on your right foot, and he does on the left, don't correct him, just mark it a failure because this in itself is indicative that he doesn't know what he is doing. Same way with the left. Starting, on his left, jump on his left. The hopping is, this hopping part is the hardest part to evaluate. The hopping directions I usually give are hop once on your right foot, once on your left and go through the whole thing three times. Now it should be rhythmcal. It shouldn't be real jerky, you shouldn't just hop on the right foot, stop and think about it, hop once on the left foot, stop and think about it, it should show some rhythm to it. And with many of our kids they can't do this. Then you won't have too much trouble after that one on number five because it's hop twice on your right foot, twice on your left foot."

A: "Who will?"

C: "When we do the exercises."

A: "And another boy to hold the book for him."

C: "Right."

A: "And you will do two, eight, nine, ten and eleven, and you will say to the kid, you just do what the leader does, but reverse it so that when he puts up his right hand, you put up your right hand. He puts up his left hand you put up your left hand -- and have the leader facing him so he does have to make this reversal. Then you can score him and your boys you have as leaders can probably memorize it as they only have five exercises to do they will be able to memorize it. Hopefully. They keep the book there throughout. Standardized procedure. And failure to, let's see, you fail on this by failing to transfer -- like he puts up his right and the kid puts up his left -- that's a failure. And a mistake in starting like he puts up his right and the kid starts to put up his left then puts up his right that is still a failure. And it is a failure if the kid just stands ther -- can't seem to do anything. The obstacle course that you run the same you did before and all you you have to test is your time and if in going over the obstacle he touches it -- if he touches it going under or if he touches it going between. It's a failure. And caution the kids before they start that they must not just clear it but they must not touch the thing. And keep your times accurately as possible."

C: "Over we used the hurdle and under we put the high bars standard at three feet."

C: "I better write this down."

P: "Three feet or three feet five inches."

C: "Three feet. We also considered under three feet a failure."

A: "Oh, that is right. They fail if they put their hand on the floor and between if they touch the chair and then do everything else you did in that obstacle course because that is how we get our time score. I think your obstacle course will turn out to be one of your more

better things you can make of the whole factor. All right, patterning this is where the kid lays on the floor on his back and you explain to him that you are going to tell him to lift his arms and legs. The arm is turned over with the wrist on the floor and when he moves (I always do it for the kids I show) and when he moves it out he must keep the wrist on the floor as he moves out and when you give the thing back he must still keep the wrist on the floor. If he moves it out this way or back this way it is a failure. Or if he moves the wrong arm or if he starts to move one and then the right one these are all failures."

A: 'Twice on your right foot, once on your left foot, twice on your right foot, once on your left foot, twice on right, once on left, and then the reverse on seven. One on the right, once on the left try to get some sort of rhythm and if they start on the wrong foot as many of our kids will that will be a way of failing. Now, this body parts is going to be fast, but remember while you are giving the child directions and while the child is giving you responses -- he is running in place. Throughout number three. Touch your right shoulder, left hip, left elbow, right elbow; ah, any failure to touch, here is the way a kid can fail, he can fail by touching the wrong part of the body, he can fail by having stopped running while making his response, or he can fail by a hesitation or a hesitation like touch your right elbow. And if he starts to do the left then goes over -- that is a failure -- if he can't do it immediately."

C: "Oh, I see."

A: "Or if he has to hesitate long enough that you can judge that he has to think which is left and right that you fail him."

P: "As I recall, we told you that when we test we are going to do it as quickly as possible."

A: "Right."

A: "Tell them as quickly as possible and to keep running and you would be surprised how many kids will have to stop running when they make their response. And then this is a failure. They can't keep the two things in mind at the same time."

C" "We stood in front of them the last time."

A: "I don't really care. You stood in from of them. I stood in back. So you judged from front, but I always stood behind so that I can tell. I don't care where you stand. In front would be preferable, because of the noise in the gym, and they may hear you better, in front, but it doesn't matter to me. Imitation of movements, this is from 132 now how are you going to do this?"

C: "They will have a leader."

A: "You score separately -- for the right arm out is one score and back is another score. Then left arm out and back is a separate score. Both arms out in back -- both legs -- then left arm and left leg back -- right arm and right leg back -- right arm and left leg back, left arm and right leg back."

C: "Which means he may bring out his right arm but in coming back he may bring it over this way, so he fails."

A: "That's right. And what was I going to tell you about this one. Yes, the heel has to stay in contact with the floor -- this part of the heel."

C: "As he's lying on the floor?"

A: "Yes, he's on the floor because he musn't raise up to his leg."

A: "Well, I have gotten canvas for the stepping stones. David has repaired the stepping stones as we have it and this is what it looks like except ours is not grided off; ours is a ten foot square of paper and it has a red and black thing on it. Now, what you do is you put the kid in a standing position with his right foot on the red and his left foot on the black and you say, "When I say go, I want you to go around here keeping your right foot on the red and your left foot on the black." Now go. When he goes put on your stop watch. If he mixes up his feet or gets off then he fails. But you also note whether he passes or fails to put down the time in seconds."

C: "Oh, I see."

A: "And time it as rigidly as possible.

C: "Excuse me. Where it says pass or fail do we still score with one and zero? Or just check it?"

C: "Right!"

A: "So, just do one or the other. "I'll tell you, just ignore and in the fail column put your one and zero on passed. Don't worry about the fail that way it will make it easier for us. So, that is as much as I can see that is going to be your problem -- except that I think that we ought to have a run through tomorrow afternoon with my two readers. This way if anything comes up they will be able to answer your questions."

A: "O. K. What will be a good time then."

C: "1:30 tomorrow then."

## APPROVAL SHEET

The thesis submitted by Mr. Mario Campanaro has been read and approved by the director of the thesis. Furthermore, the final copies have been examined by the director and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

1-16-68
Date

John W. Dzmura
Signature of Adviser